

Amendments to the Claims:



This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

/Ronnie Mancho/ (10/26/2009)

1.-17. (Cancelled)

18. (Currently Amended) An automotive lane deviation prevention (LDP) apparatus, comprising:

- (a) a lane marking detection section configured to detect a lane marking line of a driving lane of a host vehicle, based on a picture image in front of the host vehicle;
- (b) a lateral displacement estimation section configured to estimate, based on the lane marking line, a future lateral displacement of the host vehicle relative to the host vehicle's driving lane;

(c) a road surface irregularities detection section configured to determine whether the host vehicle is traveling on predetermined road surface irregularities formed on or close to the lane marking line; and

(d) a vehicle yawing motion control section configured to execute vehicle yawing motion control by which the host vehicle returns toward a central position of the host vehicle's driving lane;

wherein the vehicle yawing motion control section initiates the vehicle yawing motion control when all following conditions occur:

- (1) when the host vehicle is traveling on predetermined road surface irregularities;
- (2) while the lane marking detection section cannot recognize or detect the lane marking line; and
- (3) an absolute value of the future lateral displacement displacement, immediately before the lane marking detection section cannot recognize or detect the lane marking [[line]] line, is greater than or equal to a predetermined lateral displacement criterion.

19. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 18, further comprising:

wheel speed sensors configured to detect respective wheel speeds of road wheels of the host vehicle,

wherein the road surface irregularities detection section is configured to determine that the host vehicle is traveling on predetermined road surface irregularities when at least one of the wheel speeds detected by the wheel speed sensors is fluctuating at a substantially constant oscillation frequency in relation to a host vehicle speed.

20. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 19, wherein:

the road-surface irregularities detection section is configured to determine that the host vehicle is traveling on predetermined road surface irregularities only when either one of left and right wheel speeds is fluctuating.

21. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 18, further comprising:

a vehicle-suspension up-and-down motion sensor configured to detect an up-and-down motion of a suspension of the host vehicle,

wherein the road surface irregularities detection section is configured to determine, based on the suspension's up-and-down motion detected, whether the host vehicle is traveling on predetermined road surface irregularities.

22. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 18, further comprising a processor programmed to perform the following,

(1) determining whether the host vehicle is traveling within an area except road-ways; and

(2) inhibiting a check for the host vehicle traveling on the predetermined road surface irregularities, when the host vehicle is traveling within the area except road-ways.

23. (Currently Amended) An automotive lane deviation prevention (LDP) apparatus, comprising:

- (a) lane marking detection means for detecting a lane marking line of a driving lane of a host vehicle, based on a picture image in front of the host vehicle;
- (b) lateral displacement estimation means for estimating, based on the lane marking line, a future lateral displacement of the host vehicle relative to the host vehicle's driving lane;
- (c) road surface irregularities detection means for detecting whether the host vehicle is traveling on predetermined road surface irregularities formed on or close to the lane marking line; and
- (d) vehicle yawing motion control means for executing vehicle yawing motion control by which the host vehicle returns toward a central position of the host vehicle's driving lane;  
wherein the vehicle yawing motion control means initiates the vehicle yawing motion control when all following conditions occur:
  - (1) when the host vehicle is traveling on predetermined road surface irregularities;
  - (2) while the lane marking detection means cannot recognize or detect the lane marking line; and
  - (3) an absolute value of the future lateral ~~displacement~~ displacement, immediately before the lane marking detection means cannot recognize or detect the lane marking ~~[[line]] line~~, is greater than or equal to a predetermined lateral displacement criterion.

24. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 23, further comprising:

sensor means for detecting respective wheel speeds of road wheels of the host vehicle,  
wherein the road surface irregularities detection means is configured to determine that the host vehicle is traveling on predetermined road surface irregularities when at least one of the wheel speeds detected by the sensor means is fluctuating at a substantially constant oscillation frequency in relation to a host vehicle speed.

25. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 24, wherein:

the road surface irregularities detection means determines that the host vehicle is traveling on predetermined road surface irregularities only when either one of left and right wheel speeds is fluctuating.

26. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 23, further comprising:

vehicle-suspension up-and-down motion sensor means for detecting an up-and-down motion of a suspension of the host vehicle,

wherein the road surface irregularities detection means determines, based on the suspension's up-and-down motion detected, whether the host vehicle is traveling on predetermined road surface irregularities.

27. (Previously Presented) The automotive lane deviation prevention apparatus as claimed in claim 23, further comprising a processor programmed to perform the following,

(1) determining whether the host vehicle is traveling within an area except road-ways; and

(2) inhibiting a check for the host vehicle traveling on the predetermined road surface irregularities, when the host vehicle is traveling within the area except road-ways.

28. – 32. CANCELLED